

# Catalog Service for the Web (CSW)

Artifact	Location
Scope Statement	 CMR-2473 - JIRA project doesn't exist or you don't have permission to view it.
Trade Study	Not applicable
Requirements	<a href="https://rms.earthdata.nasa.gov/perspective.req?projectId=31&amp;docId=169154">https://rms.earthdata.nasa.gov/perspective.req?projectId=31&amp;docId=169154</a>
Acceptance Criteria	Completed. See above.
Operations Concept	TBD

## Implementing a CSW

Any CSW needs to implement the following capabilities

1. GetCapabilities <https://rms.earthdata.nasa.gov/perspective.req?projectId=31&docId=178299>
2. GetRecords <https://rms.earthdata.nasa.gov/perspective.req?projectId=31&docId=203812>
3. GetRecordById <https://rms.earthdata.nasa.gov/perspective.req?projectId=31&docId=203828>

## Replace the GCMD implementation of a CSW

Their GetCapabilities response indicates they support the following,

- GetDomain <https://rms.earthdata.nasa.gov/perspective.req?projectId=31&docId=203829>
- DescribeRecord <https://rms.earthdata.nasa.gov/perspective.req?projectId=31&docId=203821>

## Questions raised from GetCapabilities document at GCMD

The initial CMR CSW implementation will focus on using existing CMR search functionality. Once the need for additional supports exists, we might consider expanding CMR search and subsequently CMR CSW based on new CMR search functionality.

1. Should we be supporting POST and GET for these services?

*We should follow the GCMD / IDN support for GET and POST.*

1. Should we limit ourselves to supporting CSW version 2.0.2?

*Yes. Both IDN/GCMD and CWIC only support 2.0.2. 2.0.2 is better than earlier versions.*

1. Queryables (filtering properties)
  - a. Properties defined by GCMD with counterpart in CMR:
    - Title
    - Anytext
    - Identifier
    - Modified
    - RevisionDate
    - OrganisationName
    - ResourceIdentifier
    - TempExtent\_begin
    - TempExtent\_end
    - Project

- Platform
  - Location
  - ScienceKeywords
  - Instrument
- b. Properties defined in GCMD with no counterpart in CMR:
- Subject
  - Abstract
  - Format
  - Type
  - AlternateTitle
  - CreationDate
  - PublicationDate
  - HasSecurityConstraints
  - Language
  - ParentIdentifier
  - KeywordType
  - TopicCategory
  - ResourceLanguage
  - ServiceType
  - ServiceTypeVersion
  - Operation
  - Denominator
  - DistanceValue
  - DistanceUOM
  - GeographicDescription Code
  - CouplingType
  - OperatesOn
  - OperatesOnIdentifier
  - OperatesOnName
  - Lineage
  - ConditionApplyingToAccessAndUse
  - AccessConstraints
  - OnlineResourceMimeType
  - ResponsiblePartyRole
  - OnlineResourceType
  - SpecificationDate
  - MetadataPointOfContact
  - Classification
  - OtherConstraints
  - Degree
  - SpecificationTitle

2. Query Language - We should first focus on the OGC filter and get stats from IDN to determine if CQL is needed.
  - OGC filter and here
  - Common Query Language - is this needed?
3. SOAP binding
  - a. Several operations state that they have SOAP bindings. We should avoid this if possible and stick to http GET and POST with XML
4. Output Schemas - what is <http://www.isotc211.org/2005/gmd> ? And how is it different to the ISO flavors CMR supports (ISO 19115, ISO MENDS, ISO SMAP)
  - ✓ The supported schemas must be part of the DescribeRecord response. Both GCMD and CWIC have support for both schemas.

Expand for sample response (identical for GCMD and CWIC).

```
<?xml version="1.0" encoding="UTF-8"?>
<csw:DescribeRecordResponse xmlns:csw="http://www.opengis.net/cat/csw/2.0.2"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.opengis.net/cat/csw/2.0.2
    http://schemas.opengis.net/csw/2.0.2/CSW-discovery.xsd">
  <csw:SchemaComponent targetNamespace="http://www.opengis.net/cat/csw/2.0.2" schemaLanguage="http://www.w3.org/XMLSchema">
    <xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:dct="http://purl.org/dc/terms/" xmlns:ows="http://www.opengis.net/ows" id="csw-record" targetNamespace="http://www.opengis.net/cat/csw/2.0.2" elementFormDefault="qualified" version="2.0.2">
      <xsd:annotation>
        <xsd:appinfo>
          <dc:identifier>http://schemas.opengis.net/csw/2.0.2/record.xsd</dc:identifier>
        </xsd:appinfo>
        <xsd:documentation xml:lang="en">This schema defines the basic record types that must be supported by all CSW implementations. These correspond to full, summary, and brief views based on DCMI metadata terms.</xsd:documentation>
      </xsd:annotation>
      <xsd:import namespace="http://purl.org/dc/terms/" schemaLocation="rec-dcterms.xsd" />
      <xsd:import namespace="http://purl.org/dc/elements/1.1/" schemaLocation="rec-dcmes.xsd" />
      <xsd:import namespace="http://www.opengis.net/ows" schemaLocation="../../ows/1.0.0/owsAll.xsd" />
      <xsd:element name="AbstractRecord" id="AbstractRecord" type="csw:AbstractRecordType" abstract="true" />
      <xsd:complexType name="AbstractRecordType" id="AbstractRecordType" abstract="true" />
      <xsd:element name="DCMIRecord" type="csw:DCMIRecordType" substitutionGroup="csw:AbstractRecord" />
      <xsd:complexType name="DCMIRecordType">
        <xsd:annotation>
          <xsd:documentation xml:lang="en">This type encapsulates all of the standard DCMI metadata terms, including the Dublin Core refinements; these terms may be mapped to the profile-specific information model.</xsd:documentation>
        </xsd:annotation>
        <xsd:complexContent>
          <xsd:extension base="csw:AbstractRecordType">
            <xsd:sequence>
              <xsd:group ref="dct:DCMI-terms" />
            </xsd:sequence>
          </xsd:extension>
        </xsd:complexContent>
      </xsd:complexType>
      <xsd:element name="BriefRecord" type="csw:BriefRecordType" substitutionGroup="csw:AbstractRecord" />
      <xsd:complexType name="BriefRecordType" final="#all">
        <xsd:annotation>
          <xsd:documentation xml:lang="en">This type defines a brief representation of the common record format. It extends AbstractRecordType to include only the dc:identifier and dc:type properties.</xsd:documentation>
        </xsd:annotation>
        <xsd:complexContent>
          <xsd:extension base="csw:AbstractRecordType">
            <xsd:sequence>
              <xsd:element ref="dc:identifier" minOccurs="1" maxOccurs="unbounded" />
              <xsd:element ref="dc:title" minOccurs="1" maxOccurs="unbounded" />
            </xsd:sequence>
          </xsd:extension>
        </xsd:complexContent>
      </xsd:complexType>
    </xsd:schema>
  </csw:SchemaComponent>
</csw:DescribeRecordResponse>
```

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<xsd:element ref="dc:type" minOccurs="0" />
<xsd:element ref="ows:BoundingBox" minOccurs="0" maxOccurs="unbounded" />

</xsd:sequence>
</xsd:extension>
</xsd:complexContent>

</xsd:complexType>
<xsd:element name="SummaryRecord" type="csw:SummaryRecordType" substitutionGroup="csw:AbstractRecord" />
<xsd:complexType name="SummaryRecordType" final="#all">
<xsd:annotation>
<xsd:documentation xml:lang="en">This type defines a summary representation of the common record format. It extends AbstractRecordType to include the core properties.</xsd:documentation>

</xsd:annotation>
<xsd:complexContent>
<xsd:extension base="csw:AbstractRecordType">
<xsd:sequence>
<xsd:element ref="dc:identifier" minOccurs="1" maxOccurs="unbounded" />
<xsd:element ref="dc:title" minOccurs="1" maxOccurs="unbounded" />
<xsd:element ref="dc:type" minOccurs="0" />
<xsd:element ref="dc:subject" minOccurs="0" maxOccurs="unbounded" />
<xsd:element ref="dc:format" minOccurs="0" maxOccurs="unbounded" />
<xsd:element ref="dc:relation" minOccurs="0" maxOccurs="unbounded" />
<xsd:element ref="dct:modified" minOccurs="0" maxOccurs="unbounded" />
<xsd:element ref="dct:abstract" minOccurs="0" maxOccurs="unbounded" />
<xsd:element ref="dct:spatial" minOccurs="0" maxOccurs="unbounded" />
<xsd:element ref="ows:BoundingBox" minOccurs="0" maxOccurs="unbounded" />

</xsd:sequence>
</xsd:extension>
</xsd:complexContent>

</xsd:complexType>
<xsd:element name="Record" type="csw:RecordType" substitutionGroup="csw:AbstractRecord" />
<xsd:complexType name="RecordType" final="#all">
<xsd:annotation>
<xsd:documentation xml:lang="en">This type extends DCMIRecordType to add ows:BoundingBox; it may be used to specify a spatial envelope for the catalogued resource.</xsd:documentation>

</xsd:annotation>
<xsd:complexContent>
<xsd:extension base="csw:DCMIRecordType">
<xsd:sequence>
<xsd:element name="AnyText" type="csw:EmptyType" minOccurs="0" maxOccurs="unbounded" />
<xsd:element ref="ows:BoundingBox" minOccurs="0" maxOccurs="unbounded" />

</xsd:sequence>
</xsd:extension>
</xsd:complexContent>

</xsd:complexType>
<xsd:complexType name="EmptyType" />

</xsd:schema>

</csw:SchemaComponent>
<csw:SchemaComponent targetNamespace="http://www.opengis.net/cat/csw/2.0.2" schemaLanguage="http://www.w3.org/XMLSchema">
<xsi:schema xmlns:xsi="http://www.w3.org/2001/XMLSchema" xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:gco="http://www.isotc211.org/2005/gco" xmlns:gmd="http://www.isotc211.org/2005/gmd" targetNamespace="http://www.isotc211.org/2005/gmd" elementFormDefault="qualified" version="0.1">
<!-- ===== Annotation ===== -->

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<xs:annotation>
<xs:documentation>This file was generated from ISO TC/211 UML class diagrams == 01-26-2005
12:40:05 =====</xs:documentation>

</xs:annotation>
<!-- ===== Imports ===== -->
<xs:import namespace="http://www.isotc211.org/2005/gco" schemaLocation="../gco/gco.xsd" />
<xs:include schemaLocation="../gmd/constraints.xsd" />
<xs:include schemaLocation="../gmd/distribution.xsd" />
<xs:include schemaLocation="../gmd/maintenance.xsd" />
<!-- ##### Classes ----- -->
<!-- ===== Classes ===== -->
<xs:complexType name="AbstractMD_Identification_Type" abstract="true">
<xs:annotation>
<xs:documentation>Basic information about data</xs:documentation>

</xs:annotation>
<xs:complexContent>
<xs:extension base="gco:AbstractObject_Type">
<xs:sequence>
<xs:element name="citation" type="gmd:CI_Citation_PropertyType" />
<xs:element name="abstract" type="gco:CharacterString_PropertyType" />
<xs:element name="purpose" type="gco:CharacterString_PropertyType" minOccurs="0" />
<xs:element name="credit" type="gco:CharacterString_PropertyType" minOccurs="0" maxOccurs="unbound ed" />
<xs:element name="status" type="gmd:MD_ProgressCode_PropertyType" minOccurs="0" maxOccurs="unbound ed" />
<xs:element name="pointOfContact" type="gmd:CI_ResponsibleParty_PropertyType" minOccurs="0" maxOcc urs="unbounded" />
<xs:element name="resourceMaintenance" type="gmd:MD_MaintenanceInformation_PropertyType" minOccurs = "0" maxOccurs="unbounded" />
<xs:element name="graphicOverview" type="gmd:MD_BrowseGraphic_PropertyType" minOccurs="0" maxOccur s="unbounded" />
<xs:element name="resourceFormat" type="gmd:MD_Format_PropertyType" minOccurs="0" maxOccurs="unbou nded" />
<xs:element name="descriptiveKeywords" type="gmd:MD_Keywords_PropertyType" minOccurs="0" maxOccurs = "unbounded" />
<xs:element name="resourceSpecificUsage" type="gmd:MD_Usage_PropertyType" minOccurs="0" maxOccurs= "unbounded" />
<xs:element name="resourceConstraints" type="gmd:MD_Constraints_PropertyType" minOccurs="0" maxOccu rs="unbounded" />
<xs:element name="aggregationInfo" type="gmd:MD_AggregateInformation_PropertyType" minOccurs="0" m axOccurs="unbounded" />

</xs:sequence>
</xs:extension>
</xs:complexContent>

</xs:complexType>
<!-- ..... -->
<xs:element name="AbstractMD_Identification" type="gmd:AbstractMD_Identification_Type" abstract=" true" />
<!-- ..... -->
<xs:complexType name="MD_Identification_PropertyType">
<xs:sequence minOccurs="0">
<xs:element ref="gmd:AbstractMD_Identification" />

</xs:sequence>
<xs:attributeGroup ref="gco:ObjectReference" />
<xs:attribute ref="gco:nilReason" />

</xs:complexType>
<!-- ===== -->
<xs:complexType name="MD_BrowseGraphic_Type">
<xs:annotation>
<xs:documentation>Graphic that provides an illustration of the dataset (should include a legend for the graphic)</xs:documentation>

</xs:annotation>

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<xs:complexContent>
<xs:extension base="gco:AbstractObject_Type">
<xs:sequence>
<xs:element name="fileName" type="gco:CharacterString_PropertyType" />
<xs:element name="fileDescription" type="gco:CharacterString_PropertyType" minOccurs="0" />
<xs:element name="fileType" type="gco:CharacterString_PropertyType" minOccurs="0" />

</xs:sequence>
</xs:extension>
</xs:complexContent>

</xs:complexType>
<!-- ..... -->
<xs:element name="MD_BrowseGraphic" type="gmd:MD_BrowseGraphic_Type" />
<!-- ..... -->
<xs:complexType name="MD_BrowseGraphic_PropertyType">
<xs:sequence minOccurs="0">
<xs:element ref="gmd:MD_BrowseGraphic" />

</xs:sequence>
<xs:attributeGroup ref="gco:ObjectReference" />
<xs:attribute ref="gco:nilReason" />

</xs:complexType>
<!-- ===== -->
<xs:complexType name="MD_DataIdentification_Type">
<xs:complexContent>
<xs:extension base="gmd:AbstractMD_Identification_Type">
<xs:sequence>
<xs:element name="spatialRepresentationType" type="gmd:MD_SpatialRepresentationTypeCode_PropertyType" minOccurs="0" maxOccurs="unbounded" />
<xs:element name="spatialResolution" type="gmd:MD_Resolution_PropertyType" minOccurs="0" maxOccurs="unbounded" />
<xs:element name="language" type="gco:CharacterString_PropertyType" maxOccurs="unbounded" />
<xs:element name="characterSet" type="gmd:MD_CharacterSetCode_PropertyType" minOccurs="0" maxOccurs="unbounded" />
<xs:element name="topicCategory" type="gmd:MD_TopicCategoryCode_PropertyType" minOccurs="0" maxOccurs="unbounded" />
<xs:element name="environmentDescription" type="gco:CharacterString_PropertyType" minOccurs="0" />
<xs:element name="extent" type="gmd:EX_Extent_PropertyType" minOccurs="0" maxOccurs="unbounded" />
<xs:element name="supplementalInformation" type="gco:CharacterString_PropertyType" minOccurs="0" />
>

</xs:sequence>
</xs:extension>
</xs:complexContent>

</xs:complexType>
<!-- ..... -->
<xs:element name="MD_DataIdentification" type="gmd:MD_DataIdentification_Type" substitutionGroup="gmd:AbstractMD_Identification" />
<!-- ..... -->
<xs:complexType name="MD_DataIdentification_PropertyType">
<xs:sequence minOccurs="0">
<xs:element ref="gmd:MD_DataIdentification" />

</xs:sequence>
<xs:attributeGroup ref="gco:ObjectReference" />
<xs:attribute ref="gco:nilReason" />

</xs:complexType>
<!-- ===== -->
<xs:complexType name="MD_ServiceIdentification_Type">
<xs:annotation>
<xs:documentation>See 19119 for further info</xs:documentation>

</xs:annotation>
<xs:complexContent>

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<xs:extension base="gmd:AbstractMD_Identification_Type" />

</xs:complexContent>

</xs:complexType>
<!-- . . . . . -->
<xs:element name="MD_ServiceIdentification" type="gmd:MD_ServiceIdentification_Type" substitutionGroup="gmd:AbstractMD_Identification" />
<!-- . . . . . -->
<xs:complexType name="MD_ServiceIdentification_PropertyType">
<xs:sequence minOccurs="0">
<xs:element ref="gmd:MD_ServiceIdentification" />

</xs:sequence>
<xs:attributeGroup ref="gco:ObjectReference" />
<xs:attribute ref="gco:nilReason" />

</xs:complexType>
<!-- ===== -->
<xs:complexType name="MD_RepresentativeFraction_Type">
<xs:complexContent>
<xs:extension base="gco:AbstractObject_Type">
<xs:sequence>
<xs:element name="denominator" type="gco:Integer_PropertyType" />

</xs:sequence>
</xs:extension>
</xs:complexContent>

</xs:complexType>
<!-- . . . . . -->
<xs:element name="MD_RepresentativeFraction" type="gmd:MD_RepresentativeFraction_Type" />
<!-- . . . . . -->
<xs:complexType name="MD_RepresentativeFraction_PropertyType">
<xs:sequence minOccurs="0">
<xs:element ref="gmd:MD_RepresentativeFraction" />

</xs:sequence>
<xs:attributeGroup ref="gco:ObjectReference" />
<xs:attribute ref="gco:nilReason" />

</xs:complexType>
<!-- ===== -->
<xs:complexType name="MD_Usage_Type">
<xs:annotation>
<xs:documentation>Brief description of ways in which the dataset is currently used.</xs:documentation>

</xs:annotation>
<xs:complexContent>
<xs:extension base="gco:AbstractObject_Type">
<xs:sequence>
<xs:element name="specificUsage" type="gco:CharacterString_PropertyType" />
<xs:element name="usageDateTime" type="gco:DateTime_PropertyType" minOccurs="0" />
<xs:element name="userDeterminedLimitations" type="gco:CharacterString_PropertyType" minOccurs="0" />
<xs:element name="userContactInfo" type="gmd:CI_ResponsibleParty_PropertyType" maxOccurs="unbounded" />

</xs:sequence>
</xs:extension>
</xs:complexContent>

</xs:complexType>
<!-- . . . . . -->
<xs:element name="MD_Usage" type="gmd:MD_Usage_Type" />
<!-- . . . . . -->
<xs:complexType name="MD_Usage_PropertyType">

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<xs:sequence minOccurs="0">
<xs:element ref="gmd:MD_Usage" />

</xs:sequence>
<xs:attributeGroup ref="gco:ObjectReference" />
<xs:attribute ref="gco:nilReason" />

</xs:complexType>
<!-- ===== -->
<xs:complexType name="MD_Keywords_Type">
<xs:annotation>
<xs:documentation>Keywords, their type and reference source</xs:documentation>

</xs:annotation>
<xs:complexContent>
<xs:extension base="gco:AbstractObject_Type">
<xs:sequence>
<xs:element name="keyword" type="gco:CharacterString_PropertyType" maxOccurs="unbounded" />
<xs:element name="type" type="gmd:MD_KeywordTypeCode_PropertyType" minOccurs="0" />
<xs:element name="thesaurusName" type="gmd:CI_Citation_PropertyType" minOccurs="0" />

</xs:sequence>
</xs:extension>
</xs:complexContent>

</xs:complexType>
<!-- ..... -->
<xs:element name="MD_Keywords" type="gmd:MD_Keywords_Type" />
<!-- ..... -->
<xs:complexType name="MD_Keywords_PropertyType">
<xs:sequence minOccurs="0">
<xs:element ref="gmd:MD_Keywords" />

</xs:sequence>
<xs:attributeGroup ref="gco:ObjectReference" />
<xs:attribute ref="gco:nilReason" />

</xs:complexType>
<!-- ===== -->
<xs:complexType name="DS_Association_Type">
<xs:complexContent>
<xs:extension base="gco:AbstractObject_Type">
<xs:sequence />

</xs:extension>
</xs:complexContent>

</xs:complexType>
<!-- ..... -->
<xs:element name="DS_Association" type="gmd:DS_Association_Type" />
<!-- ..... -->
<xs:complexType name="DS_Association_PropertyType">
<xs:sequence minOccurs="0">
<xs:element ref="gmd:DS_Association" />

</xs:sequence>
<xs:attributeGroup ref="gco:ObjectReference" />
<xs:attribute ref="gco:nilReason" />

</xs:complexType>
<!-- ===== -->
<xs:complexType name="MD_AggregateInformation_Type">
<xs:annotation>
<xs:documentation>Encapsulates the dataset aggregation information</xs:documentation>

</xs:annotation>
<xs:complexContent>
<xs:extension base="gco:AbstractObject_Type">
<xs:sequence>

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<xs:element name="aggregateDataSetName" type="gmd:CI_Citation_PropertyType" minOccurs="0" />
<xs:element name="aggregateDataSetIdentifier" type="gmd:MD_Identifier_PropertyType" minOccurs="0" />
<xs:element name="associationType" type="gmd:DS_AssociationTypeCode_PropertyType" />
<xs:element name="initiativeType" type="gmd:DS_InitiativeTypeCode_PropertyType" minOccurs="0" />

</xs:sequence>

</xs:extension>

</xs:complexContent>

</xs:complexType>
<!-- ..... -->
<xs:element name="MD_AggregateInformation" type="gmd:MD_AggregateInformation_Type" />
<!-- ..... -->
<xs:complexType name="MD_AggregateInformation_PropertyType">
<xs:sequence minOccurs="0">
<xs:element ref="gmd:MD_AggregateInformation" />

</xs:sequence>
<xs:attributeGroup ref="gco:ObjectReference" />
<xs:attribute ref="gco:nilReason" />

</xs:complexType>
<!-- ===== -->
<xs:complexType name="MD_Resolution_Type">
<xs:choice>
<xs:element name="equivalentScale" type="gmd:MD_RepresentativeFraction_PropertyType" />
<xs:element name="distance" type="gco:Distance_PropertyType" />

</xs:choice>

</xs:complexType>
<!-- ..... -->
<xs:element name="MD_Resolution" type="gmd:MD_Resolution_Type" />
<!-- ..... -->
<xs:complexType name="MD_Resolution_PropertyType">
<xs:sequence minOccurs="0">
<xs:element ref="gmd:MD_Resolution" />

</xs:sequence>
<xs:attribute ref="gco:nilReason" />

</xs:complexType>
<!-- ===== -->
<xs:simpleType name="MD_TopicCategoryCode_Type">
<xs:annotation>
<xs:documentation>High-level geospatial data thematic classification to assist in the grouping and search of available geospatial datasets</xs:documentation>

</xs:annotation>
<xs:restriction base="xs:string">
<xs:enumeration value="farming" />
<xs:enumeration value="biota" />
<xs:enumeration value="boundaries" />
<xs:enumeration value="climatologyMeteorologyAtmosphere" />
<xs:enumeration value="economy" />
<xs:enumeration value="elevation" />
<xs:enumeration value="environment" />
<xs:enumeration value="geoscientificInformation" />
<xs:enumeration value="health" />
<xs:enumeration value="imageryBaseMapsEarthCover" />
<xs:enumeration value="intelligenceMilitary" />
<xs:enumeration value="inlandWaters" />
<xs:enumeration value="location" />
<xs:enumeration value="oceans" />
<xs:enumeration value="planningCadastre" />
<xs:enumeration value="society" />
<xs:enumeration value="structure" />
<xs:enumeration value="transportation" />
<xs:enumeration value="utilitiesCommunication" />

```

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</xs:restriction>

</xs:simpleType>
<!-- ..... -->
<xs:element name="MD_TopicCategoryCode" type="gmd:MD_TopicCategoryCode_Type" substitutionGroup="gco:CharacterString" />
<!-- ..... -->
<xs:complexType name="MD_TopicCategoryCode_PropertyType">
<xs:sequence minOccurs="0">
<xs:element ref="gmd:MD_TopicCategoryCode" />

</xs:sequence>
<xs:attribute ref="gco:nilReason" />

</xs:complexType>
<!-- ===== -->
<!-- ..... -->
<xs:element name="MD_CharacterSetCode" type="gco:CodeListValue_Type" substitutionGroup="gco:CharacterString" />
<!-- ..... -->
<xs:complexType name="MD_CharacterSetCode_PropertyType">
<xs:sequence minOccurs="0">
<xs:element ref="gmd:MD_CharacterSetCode" />

</xs:sequence>
<xs:attribute ref="gco:nilReason" />

</xs:complexType>
<!-- ===== -->
<!-- ..... -->
<xs:element name="MD_SpatialRepresentationTypeCode" type="gco:CodeListValue_Type" substitutionGroup="gco:CharacterString" />
<!-- ..... -->
<xs:complexType name="MD_SpatialRepresentationTypeCode_PropertyType">
<xs:sequence minOccurs="0">
<xs:element ref="gmd:MD_SpatialRepresentationTypeCode" />

</xs:sequence>
<xs:attribute ref="gco:nilReason" />

</xs:complexType>
<!-- ===== -->
<!-- ..... -->
<xs:element name="MD_ProgressCode" type="gco:CodeListValue_Type" substitutionGroup="gco:CharacterString" />
<!-- ..... -->
<xs:complexType name="MD_ProgressCode_PropertyType">
<xs:sequence minOccurs="0">
<xs:element ref="gmd:MD_ProgressCode" />

</xs:sequence>
<xs:attribute ref="gco:nilReason" />

</xs:complexType>
<!-- ===== -->
<!-- ..... -->
<xs:element name="MD_KeywordTypeCode" type="gco:CodeListValue_Type" substitutionGroup="gco:CharacterString" />
<!-- ..... -->
<xs:complexType name="MD_KeywordTypeCode_PropertyType">
<xs:sequence minOccurs="0">
<xs:element ref="gmd:MD_KeywordTypeCode" />

</xs:sequence>
<xs:attribute ref="gco:nilReason" />

</xs:complexType>
<!-- ===== -->
<!-- ..... -->
<xs:element name="DS_AssociationTypeCode" type="gco:CodeListValue_Type" substitutionGroup="gco:CharacterString" />

```

```
<!-- ..... -->
<xs:complexType name="DS_AssociationTypeCode_PropertyType">
<xs:sequence minOccurs="0">
<xs:element ref="gmd:DS_AssociationTypeCode" />

</xs:sequence>
<xs:attribute ref="gco:nilReason" />

</xs:complexType>
<!-- ===== -->
<!-- ..... -->
<xs:element name="DS_InitiativeTypeCode" type="gco:CodeListValue_Type" substitutionGroup="gco:CharacterString" />
<!-- ..... -->
<xs:complexType name="DS_InitiativeTypeCode_PropertyType">
<xs:sequence minOccurs="0">
<xs:element ref="gmd:DS_InitiativeTypeCode" />

</xs:sequence>
<xs:attribute ref="gco:nilReason" />

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▼ Example of CMR ISO 19115 metadata for 'Winter Icing and Storms Project (WISP) Save Storms Data from the NOAA Forecast Systems Laboratory (FSL)'
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▼ Example of GCMD CSW metadata for 'Winter Icing and Storms Project (WISP) Save Storms Data from the NOAA Forecast Systems Laboratory (FSL)'

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and microphysical processes leading to the production and depletion of
supercooled liquid water, and (2) to improve forecasts of aircraft icing in
winter storms. The experiments are conducted during the winter months in the
Front Range area of Colorado. During intense observation periods (IOPs) winter
storms are examined by a host of instruments and platforms, including research
aircraft, weather radars, surface meteorological networks, microwave
radiometers, wind profilers, and radio acoustic sounding systems (RASS). Data
collected during some of the storms are archived in the WISP Save Storms
data set. The content of the data set is described in detail in the WISP Data
catalogs.
```

[ This document was provided by NASA's Global Change Master Directory.  
For more information on the source of this metadata please visit  
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## 1. Spatial constraints

### a. Operators

- i. Intersects
- ii. BBOX - why is this not an Operand? *Because it is defined as an Operator by the CSW specification. It doesn't seem right but this is how it is defined.*
- i. Equals - not supported by CMR
- ii. Overlaps - not supported by CMR - map to intersects?
- iii. Disjoint - not supported by CMR
- iv. Touches- not supported by CMR - map to intersects?
- v. Crosses- not supported by CMR - map to intersects?
- vi. Within- not supported by CMR
- vii. Contains- not supported by CMR

### b. Operands

- i. Point
- ii. Line
- iii. Polygon
- iv. Envelope - not supported by CMR

## Questions raised from GetRecords

### 1. CSW supports result set navigation using cursor + page size. CMR supports this by page + page size. How do we reconcile that?

*I believe we can convert from CMR to CSW when we generate the results and from CSW to CMR when we formulate the CMR query.*  
Example:

CSW returns: `nextRecord="11" numberOfRecordsMatched="269" numberOfRecordsReturned="10"` for a request with `startRecord = 1 and maximumRecords = 10`

CMR returns: `page_num=1, page_size=10` and the response header `CMR-hits = 269` for a request with `page_num = 1 and page_size = 10`

## Questions raised from DescribeRecords

### 1. What schemas do we support?

- a. <http://www.opengis.net/cat/csw/2.0.2>
- b. <http://www.isotc211.org/2005/gmd>

## **Questions raised from GetDomain**

1. There is some support for this in the GCMD CSW but it is not documented in the GetCapabilities response.

## **Reference documentation**

- CSW specifications
- CSW 2.0.2 specification
- CSW 2.0.2 ISO Metadata Application Profile being used by GCMD CSW
- OWS Schema used by GCMD CSW